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parts leaves," and "that the receptacle of a flower is of the nature of the stem." See Gray's Botanical Text-Book, p. 230.—W. J. BEAL, *Union Springs, N. Y.*

IDENTIFICATION OF LICHENS BY A CHEMICAL TEST.—The Rev. W. A. Leighton continues his series of papers on this subject in the "Annals." He has lately given a notice of the Abbé Cœman's essay on the *Cladoniæ* of the herbarium of the great lichenologist, Acharius, and the results of the application to his own herbarium of a chemical test, as a means of deciphering species of Lichens. The reaction, which is found so useful, is that of hydrate of potash, which in certain cases produces a yellow color, whilst in others there is no reaction, or only a slight fuscescence. In no case, says Mr. Leighton, is the reaction of greater utility than in the difficult tribe of *Cladoniæ*, that *crux* of lichenologists, where its application enables us, with admirable precision and exactness, to determine the various species, to redistribute the confounded species, and to refer to their proper systematic places the innumerable varieties and forms which may resemble each other in external character.— *Quarterly Journal of Science, London.*

ZOÖLOGY.

THE BITTERN.—I notice in your August issue a letter from Mr. Endicott, in which he rather questions the accuracy of my account of the habits of the American Bittern (*Botaurus lentiginosus*), page 405, Ornithology of New England.

I am perfectly familiar with the meadows which Mr. Endicott refers to, have lived for eleven years within two or three miles of them, and have hunted them times innumerable. I never saw more than two Bitterns there in the area of a hundred acres, and doubt if any other person ever did. They seem to be most numerous in that locality in September, about the time of Snipe-shooting, and doubtless are then on the passage from the north. So I do not think it strange that Mr. Endicott has never met with many of the nests. But we cannot establish the habits of a species from individual cases, we must *generalize.*

The Bittern, as a general thing, in New England, judging from the observation of the majority of my friends and correspondents, and my own, oftener nests in bushes than on the ground, and in some localities it gathers in communities, scattered and detached if you will, but still communities, not of course extensive heronries, such as we see among the Night Herons and others, but still heronries.

Almost every nest that I ever saw or heard of was built in low bushes or scrubby alders, usually overhanging the water. Sometimes a nest is found placed on the ground, or rather in a tussock of grass, but in such instances the meadow or swamp is comparatively dry, and not subject to inundations.

We cannot be too deliberate in forming conclusions on the habits of any animal, and our decisions must be made from numerous observations. What would Mr. Endicott say if I should affirm that the Dusky Duck (*Anas obscura*)—which is notoriously a ground nester—builds in high trees? yet Mr. George A. Boardman found one with her nest full of eggs in such a position; or that the Chipping Sparrow (*Spizella socialis*) nests in bushes? I have known it to; or that the Ruffed Grouse (*Bonasa umbellus*) lays in deserted crow's nests? I have heard of three instances; or that the Towhe Bunting (*Pipilo erythrophthalmus*) nests in low trees? it has been found to do so at Toronto. He would say, and so would any one, that I should not judge from one or two occurrences.—E. A. SAMUELS, *Boston.*

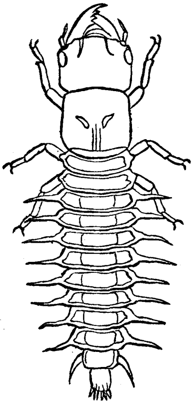
EGGS OF THE INDIGO BIRD.—Dr. T. W. Brewer, in the NATURALIST for May, doubted that any spotted eggs of the Indigo Bird (*Cyanospiza cyanea*) have yet been found. I have several specimens in my own collection, and have heard of others being found marked, decidedly, with spots of reddish brown. The following extract from a letter recently received from Mr. L. E. Ricksecker, of Nazareth, Pa., will furnish an instance: "I found a few days since the nest of an Indigo Bird, with four eggs, which are sprinkled with fine dots of pale-red, particularly at the greater end, where they form a circle. Being puzzled at first, I thought it might be a species new to me, whereupon I took my gun and shot the female as she was leaving the nest. She proves to be an Indigo Bird. I looked into your book to compare the eggs with your description, when I found that I had before sent you some specimens marked in a similar manner. I think the present set is rather more sprinkled than any I ever found."—E. A. SAMUELS, *Boston.*

A SNAKE-LIKE CATERPILLAR.—The most extraordinary instance of imitation I ever met with [on the Amazon] was that of a very large caterpillar, which stretched itself from amidst the foliage of a tree which I was one day examining, and startled me by its resemblance to a small snake. The first three segments behind the head were dilatable at the will of the insect, and had on each side a large black pupilated spot, which resembled the eye of the reptile; it was a poisonous or viperine species mimicked, and not an innocuous or columbine snake; this was proved by the imitation of keeled scales on the crown, which was produced by the recumbent feet, as the caterpillar threw itself backward. The Rev. Joseph Greene, to whom I gave a description, supposes the insect to have belonged to the family *Notodontidæ*, many of which have the habit of thus bending themselves. I carried off the caterpillar, and alarmed every one in the village where I was then living, to whom I showed it. It unfortunately died before reaching the adult form.—H. W. BATES, *Linnæan Transactions*, 1862, *p.* 509.

THE HORNED CORYDALUS.—One of the largest and most formidable looking, though perfectly harmless, insects we have, is the *Corydalus cornutus.* Its large size, its broad net-veined wings and slow-stupid flight, and aquatic habits, besides many other characteristics, place it very low in the scale of insect life. Insects like this were characteristic of the Coal Period, probably breeding in the marshes and fens of Carboniferous times. It is probable that the *Sialidæ*, the family to which this insect belongs, were much more numerous in those early ages of the world's history than now, as there are wide gaps between the genera, which, were the geological record complete, we could undoubtedly fill up.

We do not yet know how many eggs are laid by the parent, or their form and size. Those of *Sialis*, an allied genus, are cylindrical, terminating at the top in a sudden point, and are attached, side by side, to plants with the greatest regularity, according to Westwood.

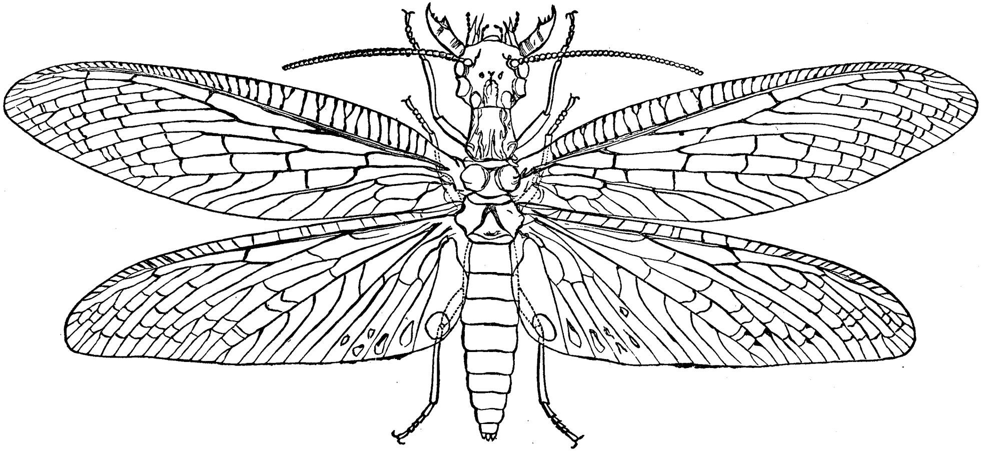
Fig. 2.



The larva (Fig. 2) is broad and flattened, with a pair of long, thick respiratory filaments attached to the side of each ring of the abdomen, and the body ends in a pair of legs with strong claws, which the artist has not represented in our figure. It is very fierce and active in its habits, moving over the bottom of pools, and preying on other insects, which it seizes in its powerful jaws. When of full size, it leaves the stream or pool in which it has been living, and makes an earthen cell in the bank, in which the inactive pupa undergoes the rest of its transformations. Our figure (Fig. 1, from Sanborn) of the perfect insect represents the female. In the male, the jaws are nearly as long as the antennæ, and much like them in form, being very slender.

BREEDING PLACE OF THE PELICAN.—In your August number appears a statement of Mr. Beal in regard to the White Pelican captured in Cayuga county, in which he copies the following extract from Professor Baird's account of the bird, in reference to its breeding habits:

Fig. 1.



The Horned Corydalus.

"This species breeds in the fur countries, generally selecting inaccessible places in the neighborhood of waterfalls." From the above it it would seem that this bird only breeds in the countries far to the north. Now this bird breeds abundantly on the sand-bars opposite New Found Harbor, in Indian River, Florida. They lay their eggs about the middle of May on the bare sand, making no nest whatsoever.—CHARLES H. NAUMAN, *Lancaster, Pa.*

GENERIC AND SPECIFIC NAMES.—The scientific name of an animal or plant consists of two names, the *generic* and *specific*, which are given in Latin, as being, by universal consent, the most convenient medium between naturalists of different nations. Thus the scientific name of the Lion, is *Felis leo* Linn. *Felis* is the name of the genus, and *leo* is the name of the species. Linn. stands for *Linnæus*, being either the founder of the entire name, or the first one to describe the species scientifically. So also with the name *Helix albolabris* Say. Mr. Say was the first author to describe our common White-lipped Snail belonging to the genus *Helix*, and species *albolabris*.

ANALOGY AND HOMOLOGY.—Analogy is a resemblance in function between parts differing anatomically, and constructed on wholly different types. Thus the wing of the butterfly is *analogous* to the wing of a bird. In this sense must be understood the comparison made by Oken, between the pupa, or chrysalis, of an insect, and a crustacean, such as the Shrimp. The resemblance is vague, but yet sufficiently apparent to many to enable the two things to be thus compared.

The term *Homology* indicates an identity between the structure of certain parts, though the functions they perform may be quite different. Thus the arm of man and a bird's wing are said to be *homologous*, since their anatomical structure is fundamentally the same, though their uses are so different.

THE AQUARIUM.—In the matter of cementing aquaria, I have had considerable experience. I have always found white lead of any kind bad. I sent to England and paid a good price for a "secret" cement of one of the leading dealers, but found it useless, as it contained white lead or litharge. The best cement is applied *hot*. Marine glue, when it can be got, would answer capitally; but I have found a mixture of pitch, tallow, and umber melted and poured on good. I prefer to cover the corners and bottom with glass, and use an iron frame and bottom. Thus we have a strong and light-looking affair, which can be scrubbed with sand internally, as is sometimes desirable. By far the best aquaria I ever saw were made by the well-known bookseller, C. E. Hammett, of Newport, R. I.—A. M. EDWARDS, *New York*.

TEACHING OF NATURAL SCIENCE IN PUBLIC SCHOOLS.—In a paper read before the British Association, Rev. W. Farrar "expressed his conviction of the necessity and desirability of extensive education in physical science." Dr. Hooker "considered chemistry as too rigid a study for a young boy to commence with, and thought botany and zoölogy should be the first studies." Professor Tyndall "had often witnessed the deep interest boys took in the study of physics, when properly opened to them. The habit of verification by experiment, and the consciousness of a power of prediction, were most important characters to implant in the mind; but this could only be done by a true and philosophic study."

METHOD OF OBTAINING A NEW QUEEN BEE FROM WORKER-GRUBS.—Mr. Tegetmeier has described a practical application of Shirach's discovery respecting the power of bees to raise a new queen from a neuter or worker grub, by means of which the contents of old hives can be taken without destroying the bees or sacrificing any brood:—

> "The plan consists in driving out the queen, and about half the bees in the spring, and establishing them as a new swarm, when the bees remaining in the old hive have to raise a new queen from a worker grub. From the time required to accomplish this, it follows that no egg can be laid for about three weeks; by this time the workers, proceeding from eggs laid by the old queen, will have been hatched out, and the cells filled with honey, when the whole of the bees are to be driven out, and the honey, which will be found perfectly free from brood, retained for use."—*Proceedings of the Entomological Society of London.*

NOVEL WAY OF SHOOTING EAGLES.—Hunters find it a very easy matter to shoot the Bald Eagles, which are occasionally found in winter along the shores of Cayuga Lake. They approach the birds on horseback, to within fifteen or twenty yards, and then slide from the horse and shoot them at their leisure.—W. J. BEAL.

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GEOLOGY.

ORIGIN OF LIFE ON OUR GLOBE.—With regard to the origin of life on our globe, M. Figuier does not dogmatize:—Did plants precede animals, we cannot tell, but such would appear to have been the order of creation." Our globe, he thinks, during the Cambrian and Silurian periods, was not yet mature enough for the existence of the higher organisms. "A pale sun struggled to penetrate the dense atmosphere of the primitive world, and yielded a dim and imperfect light to the first created beings as they left the hand of the Creator, organisms often rudimentary, but at other times sufficiently advanced to indicate a progress towards most perfect creations." The absence of organisms more advanced in the zoölogical scale than were the Trilobites, is no proof that more highly organized animals did not exist on the globe during the Cambro-Silurian period. Those who